

CHAPTER 5. KEY FINDINGS

KEY FINDINGS

1 Nearly a decade after its publication, the 1993 FHRP still remains a well-reasoned, forward looking, cutting edge document. It embodies a decisive paradigm shift from **flood control**—*we can engineer our way out of flooding problems*—to **flood hazard reduction**—*floods are a natural and necessary part of how rivers function; let us therefore understand the challenge and do as much as practicable to keep people (and facilities) out of harms way*.

For a variety of reasons—inadequate public awareness, other competing department priorities, minimal funding—the tremendous potential of the River Management Program has never really been fully realized. In reality, the Program has focused on some important technical analyses (i.e. hazard mapping), enhancing its early warning system for flood events, and maintenance of pre-existing flood control facilities. To date, only a relatively few innovative property buyouts and relocations, major levee set backs, new overflow channels, and habitat reconnections have been completed. A number of the habitat-friendly adopted FHRP policies have been focused to a smaller subset of fundable priorities. Scant local funding has resulted in completion of an even smaller number of major construction projects. Absence of an appropriate countywide tracking and monitoring system makes it impossible to truly measure the broader effectiveness of the Program and its policies.

2 Biological systems exhibit hierarchical properties, i.e., they exhibit different properties and behaviors at different levels of organization. Understanding how things work on one level does not necessarily help predict what will happen on a different level. This need to understand things on different levels—at different spatial scales (e.g., watershed; river reach; project) and different time frames (e.g., short vs. long term)—is critical to preparing an environmental

effects study or biological assessment of the River Management Program.

Application of NMFS' *Matrix of Pathways and Indicators* impact assessment methodology to the River Management Program maintenance projects indicates that on a project scale with a short-to-intermediate time frame, the most significant adverse impact is localized temporary minor increase in sediment movement and turbidity related to construction activities. As the construction site re-stabilizes and newly planted vegetation becomes established, this impact diminishes to non-significance. On the positive side, addition of new riparian plantings and LWD in River Management Program projects, over the intermediate-to-long term, will result in small improvements to water quality, habitat elements, and channel conditions.

Application of the same *Matrix* methodology on a cumulative, watershed or landscape scale, over the long term, however, results in totally different, but equally correct, conclusions. In highly modified river channels, the very presence of revetments and toe rock along extensive river reaches prevents lateral channel movement, significantly altering the natural dynamic equilibrium between river flow and sediment transport. Extensive levees can significantly alter the frequency and behavior of natural river flood flows. Other historic impacts include removal of riparian vegetation, loss of LWD, and disconnection of riverine wetlands, backwaters, and side-channels. Still larger changes, such as the addition of flood control dams and large water diversions, have further altered the fundamental flow patterns of King County rivers.

These fundamental natural river processes—the scouring and deposition of sediment by flooding; the erosion and migration of river banks creating new channels, uncovering new sediment, promoting the cyclical rise and fall of riparian forests and new sources of LWD—are the very processes that con-

tinually generate and recreate high-quality salmonid habitat. Given the scale and time frame on which these changes took place, particularly in the 1960s and 70s when hundreds of facilities were built along miles of river banks, it is not surprising that, cumulatively, both the quality and quantity of historical salmonid habitat are seriously diminished. This is especially true when considering the land-use context within which these alterations occurred.

3 Ongoing River Management Program maintenance projects are yielding intermediate to long-term improvement to salmonid habitats in King County. Implementation of the 1993 FHRP policies is, at a minimum, assuring that the quality of riverine habitat does not continue to degrade, and to some extent, facilitating some degree of improvement. The River Management Program project scale, however, is small when compared with the far-reaching river changes wrought 30 or 40 years ago.

4 The species of concern—chinook, coho, and bull trout—are not uniformly distributed across King County rivers. Rather, they tend to congregate in selected river reaches or habitat types that are particularly desirable for spawning or rearing. Because these sites tend to be re-occupied year after year, they are sometimes referred to as core areas and are likely to play a key role in future species conservation and recovery strategies (Martin 1999; Luchetti 2001).

Even experienced salmonid specialists acknowledge that they do not fully understand the underlying physical or biological characteristics that make these core areas desirable to the fish. An important issue for the River Management Program is to explore the relationship of existing facilities to these core areas (for example, several known chinook spawning sites are in heavily modified river reaches) to determine if these areas warrant different maintenance or recovery strategies than non-core river reaches.

5 The biological effects outlined in this report clearly operate at two very different spatial and temporal scales. Temporary turbidity and other construction-related impacts of individual maintenance projects can be effectively addressed by developing comprehensive project level best management practices (Project BMPs) and updating the 1993 “Guidelines for Bank Stabilization Projects,” as appropriate. More attention should be given to developing a reliable, repeatable process for selecting the most appropriate solutions for various facilities maintenance concerns, under different river habitat and fish use scenarios.

The River Management Program is in a unique position to become a focal point for bolder, more far-sighted and effective salmonid recovery actions. This will involve actions on two equally important parallel tracks: (1) Development of Programmatic level BMPs with companion policy refinements and larger-scale actions that can maximize the public benefits of flood hazard actions while also promoting recovery of more natural river processes (promoting more property buy outs and levee set backs, for example). These Programmatic actions could also address different FHRP policies for application in core conservation areas versus non-core areas. (2) Carefully evaluating opportunities for the River Management Program to more strategically implement its program in the future. New policies may be controversial; worthwhile program changes and new initiatives will require longer-range goals and implementation programs, access to greater funding is needed, broader group consensus building may be required to develop community support and advocacy, and more visibility and program priority at management and policy making levels. It may be possible for the River Management Program to become both an advocate for, and an implementing arm or advisor to, the various King County WRIA management groups and salmon recovery priorities. A challenge facing the Program is how best to incorporate public flood hazard reduction concerns in operational plans, along with the desire for improved river function and salmonid recovery. If consensus could be achieved, the River Management Program may gain access to increased funding and opportunities to significantly aid in the recovery of the endangered salmonid species.